

**IN THE CLAIMS:**

1           1.       (Currently Amended) A semiconductor laser device comprising:  
2                   a plurality of laser light oscillators that each emit a laser beam from an outlet  
3 thereof; and  
4                   a diffraction grating that ~~at least partially reflects, scatters, or~~ transmits a laser  
5 beam that is oscillated in at least one of the laser light oscillators and is emitted from an outlet  
6 thereof, so that a portion of the laser beam is incident on at least one of the other laser light  
7 oscillators ~~to enable phase locking~~.

1           2.       (Previously Presented) The semiconductor laser device according to Claim 1,  
2                   wherein the plurality of laser light oscillators are included in a semiconductor  
3 laser array element, and  
4                   the diffraction grating is disposed so as to face the outlet of the at least one of the  
5 laser light oscillators, the diffraction grating being a translucent member that (a) partially  
6 transmits the laser beam and (b) partially reflects or scatters the laser beam so that a portion of  
7 the laser beam is directed to the at least one of the other laser light oscillators.

1           3.       (Previously Presented) The semiconductor laser device according to Claim 1,  
2                   wherein the plurality of laser light oscillators are included in a plurality of  
3 semiconductor laser array elements in such a manner that at least two laser light oscillators are  
4 included in each laser light oscillator in an array, the plurality of semiconductor laser array  
5 elements being stacked up, and  
6                   the diffraction grating is disposed so as to face the outlet of the at least one of the  
7 laser light oscillators included in one of the semiconductor laser array elements, the diffraction

8 grating being a translucent member that (a) partially transmits the laser beam and (b) partially  
9 reflects or scatters the laser beam so that a portion of the laser beam is directed to the at least one  
10 of the other laser light oscillators included in the other semiconductor laser array elements.

1 4. (Previously Presented) The semiconductor laser device according to Claim 1,  
2 wherein a reflecting optical path, a scattering optical path, and a transmitting  
3 optical path of the diffraction grating are directed to the outlet of the at least one of the other  
4 laser light oscillators, thereby the portion of the laser beam is directed in a vicinity of an optical  
5 axis of the laser beam at the outlet of the at least one of the other laser light oscillators.

1 5. (Previously Presented) The semiconductor laser device according to Claim 2,  
2 wherein the diffraction grating is a flat plate having a main surface that is either a  
3 flat plane or a scabrous plane, the main surface being an incidence plane of the laser beam, and  
4 the ~~optical element~~ diffraction grating partially reflects or scatters the laser beam on the main  
5 surface.

1 6. (Previously Presented) The semiconductor laser device according to Claim 3,  
2 wherein the diffraction grating is a flat plate having a main surface that is either a  
3 flat plane or a scabrous plane, the main surface being an incidence plane of the laser beam, and  
4 the diffraction grating partially reflects or scatters the laser beam on the main surface.

1 7. (Previously Presented) The semiconductor laser device according to Claim 2,  
2 wherein the diffraction grating is a flat plate which includes the diffraction grating  
3 on a main surface thereof, the main surface being an incidence plane of the laser beam, and the

4 flat plate partially diffracts the laser beam on the diffraction grating at a predetermined angle  
5 when the diffraction grating partially reflects the laser beam.

1 8. (Previously Presented) The semiconductor laser device according to Claim 3,  
2 wherein the diffraction grating is a flat plate which includes a diffraction grating  
3 on a main surface thereof, the main surface being an incidence plane of the laser beam, and the  
4 flat plate partially diffracts the laser beam on the diffraction grating at a predetermined angle  
5 when the diffraction grating partially reflects the laser beam.

1 9. (Previously Presented) The semiconductor laser device according to Claim 7,  
2 wherein the diffraction grating directs -1st order diffracted light and +1st order  
3 diffracted light generated when the laser beam is partially diffracted, so as to be respectively  
4 incident on laser light oscillators that are adjacent to the at least one of the laser light oscillators  
5 from which the laser beam has been emitted.

1 10. (Previously Presented) The semiconductor laser device according to Claim 8,  
2 wherein the diffraction grating directs -1st order diffracted light and +1st order  
3 diffracted light generated when the laser beam is partially diffracted, so as to be respectively  
4 incident on laser light oscillators that are adjacent to the at least one of the laser light oscillators  
5 from which the laser beam has been emitted.

1 11. (Previously Presented) The semiconductor laser device according to Claim 2,  
2 wherein the diffraction grating has been subjected to hologram processing so as to  
3 function as a hologram to condense or collimate a portion of the laser beam that has transmitted  
4 therethrough.

1           12.   (Previously Presented) The semiconductor laser device according to Claim 3,  
2                   wherein the diffraction grating has been subjected to hologram processing so as to  
3 function as a hologram to condense or collimate a portion of the laser beam that has transmitted  
4 therethrough.

1           13.   (Previously Presented) The semiconductor laser device according to Claim 2,  
2                   wherein the plurality of laser light oscillators each have two outlets, from one of  
3 which the laser beam is emitted to be reflected, scattered, or diffracted by the optical element,  
4 and from the other of which the laser beam is emitted from the semiconductor laser array  
5 element,  
6                   the diffraction grating is disposed so as to face the one outlet of each of the laser  
7 light oscillators, and reflects, scatters, or diffracts the laser beam.

1           14.   (Previously Presented) The semiconductor laser device according to Claim 3,  
2                   wherein the plurality of laser light oscillators each have two outlets, from one of  
3 which the laser beam is emitted to be reflected, scattered, or diffracted by the diffraction grating,  
4 and from the other of which the laser beam is emitted from the semiconductor laser array  
5 element,  
6                   the diffraction grating is disposed so as to face the one outlet of each of the laser  
7 light oscillators, and reflects, scatters, or diffracts the laser beam.

1           15.   (Original) The semiconductor laser device according to Claim 3,  
2                   wherein the plurality of semiconductor laser array elements respectively include  
3 substrate layers that have been cut out of one semiconductor wafer.

1           16.   (Previously Presented) The semiconductor laser device according to Claim 2,  
2                   wherein the plurality of oscillators are in a single array and each has a real  
3 refractive index guided self-aligned structure.

1           17.   (Original) The semiconductor laser device according to Claim 3  
2                   wherein the plurality of semiconductor laser array elements each have a real  
3 refractive index guided self-aligned structure.

1           18.   (Original) A multiple wavelength laser light emitting apparatus, comprising:  
2                   a plurality of semiconductor laser devices that each emits a plurality of laser  
3 beams, wavelengths of the laser beams emitted from each semiconductor laser device being  
4 different from wavelengths of the laser beams emitted from a different semiconductor laser  
5 device; and  
6                   an optical element that condenses a plurality of laser beams emitted from each of  
7 the plurality of semiconductor laser devices at a predetermined position,  
8                   wherein at least one of the semiconductor laser devices is the semiconductor laser  
9 device described in Claim 1.

1           19.   (Original) The multiple wavelength laser light emitting apparatus according to  
2 Claim 18, further comprising:  
3                   an adjusting means for adjusting a position at which the plurality of laser beams  
4 emitted from each of the plurality of semiconductor laser devices are condensed, by driving the  
5 optical element;

6 a laser driving means for selecting a semiconductor laser device that emits laser  
7 beams each having a designated wavelength, out of the plurality of semiconductor laser devices,  
8 and driving the selected semiconductor laser device; and

9 a control means for controlling the adjusting means in accordance with a  
10 wavelength of the laser beams to be emitted.

1 20-28. (Cancelled)

1 29. (Currently Amended) A semiconductor laser device comprising;

2 a plurality of laser light oscillators that each emit a laser beam from a respective  
3 outlet; and

4 ~~an optical element~~ a diffraction grating that at least partially directs a sufficient  
5 portion of a laser beam from the plurality of laser light oscillators to enter another of the plurality  
6 of laser light oscillators to enable a phase locking of the respective laser light oscillators while  
7 transmitting the remaining portion of the laser beam, when the respective outlets of the laser light  
8 oscillators are aligned with the ~~optical element~~ diffraction grating to enable each one of the laser  
9 light oscillators to receive at least a portion of the laser beam from another of the plurality of  
10 laser light oscillators to enable a phase locking of each one of the plurality of laser light  
11 oscillators.

1 30. (Cancelled)

1 31. (Previously Presented) The semiconductor laser device according to Claim 29

2 wherein the optical element is a flat plate.

1           32.   (Previously Presented) The semiconductor laser device according to Claim 29  
2 wherein the optical element includes a hologram to collimate portions of the laser beams  
3 transmitted therethrough.

1           33.   (Previously Presented) The semiconductor laser device according to Claim 29  
2 wherein the laser light oscillators each have a refractive index guided self-aligned structure and  
3 are arranged parallel to each other.

1           34.   (Previously Presented) The semiconductor laser device according to Claim 33  
2 wherein each of the laser light oscillators include GaInP/AlGaInP quantum well active layers.

1           35.   (Previously Presented) The semiconductor laser device according to Claim 29  
2 wherein the optical element directs between 10% to 30% of the incident laser beam to enter other  
3 laser light oscillators.

1           36.   (Previously Presented) The semiconductor laser device according to Claim 29  
2 wherein the optical element directs the sufficient portion of the laser beam at an optical axis of  
3 another laser light oscillator.

1           37.   (Previously Presented) The semiconductor laser device according to Claim 29  
2 wherein the optical element is a diffraction grating with vertical and horizontal grooves that cross  
3 each other.

1           38.   (Previously Presented) The semiconductor laser device of Claim 29 wherein the  
2 plurality of laser light oscillators are arranged in a plurality of arrays, each array includes a plural  
3 number of laser light oscillators, the arrays are vertically stacked and the optical element

4 partially directs a sufficient portion of a plurality of laser beams from each array to enter laser  
5 light oscillators of other stacked arrays to enable a phase locking of all of the laser light  
6 oscillators.

1 39. (New) A semiconductor laser device comprising;  
2 a plurality of laser light oscillators that each emit a laser beam from a respective  
3 outlet; and  
4 means for phase locking the respective plurality of laser light oscillators including  
5 an optical element that at least partially directs a sufficient portion of a laser beam from the  
6 plurality of laser light oscillators to enter another of the plurality of laser light oscillators to  
7 enable a phase locking of the respective laser light oscillators, when the respective outlets of the  
8 laser light oscillators are aligned with the optical element to enable each one of the laser light  
9 oscillators to receive at least a portion of the laser beam from another of the plurality of laser  
10 light oscillators to enable a phase locking of each one of the plurality of laser light oscillators.

1 40. (New) A semiconductor laser device comprising;  
2 a plurality of laser light oscillators that each emit a laser beam from a respective  
3 outlet; and  
4 an optical element transmits, through the optical element, a major portion of a  
5 laser beam from the plurality of laser light oscillators and at least partially directs, apart from the  
6 transmission of the major portion, a sufficient portion of a laser beam from the plurality of laser  
7 light oscillators to enter another of the plurality of laser light oscillators to enable a phase locking  
8 of the respective laser light oscillators, when the respective outlets of the laser light oscillators  
9 are aligned with the optical element to enable each one of the laser light oscillators to receive at



- 10 least a portion of the laser beam from another of the plurality of laser light oscillators to enable a
- 11 phase locking of each one of the plurality of laser light oscillators.